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(58) Field of search
B8M
(71) Applicants
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(54) Taped bag dispenser

(57) Apparatus for dispensing bags from a chain (1) of bags connected together in an imbricated arrangement on a pair of tapes (3, 5) has a source (9) of taped bags and a device comprising a reel (11, 13) for winding each tape, drive means (15) which transmits motion to a differential gear (17) which imparts rotational

movement to the reels whereby the reels can rotate at different speeds so as to maintain substantially equal tension in the two tapes and thus maintain the bags in an aligned state. A sensing means (23) detects the presence or absence of a bag and is in operative communication with the drive means (15) which may comprise a sprocket and chain or a pneumatic ram.

ERRATA

SPECIFICATION NO 2064477A

Page 2, line 58, *after 1 delete* and 7.

Page 2, line 73, *after tapes. Start new paragraph insert*

7. . . A bag dispensing apparatus comprising: separate reels; drive means; and a differential communicating with said drive means and said separate reels; wherein said drive means transmits rotational motion to said separate reels by way of said differential; and wherein each of said separate reels is adapted to individually wind one of at least two tapes attached to, and thus unifying, a plurality of bags, whereby said bag dispensing apparatus is adapted to maintain said plurality of bags in substantial alignment by individually winding said separate reels.

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4 September 1981

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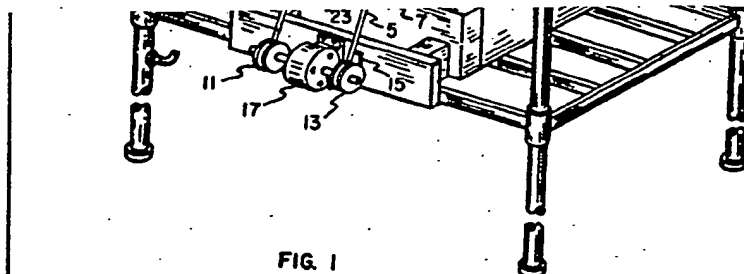


FIG. 1

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(71) Applicants W. R. Grace & Co., Grace Plaza, 1114 Avenue of the Americas, New York, New York 10036, United States of America
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(54) Taped bag dispenser

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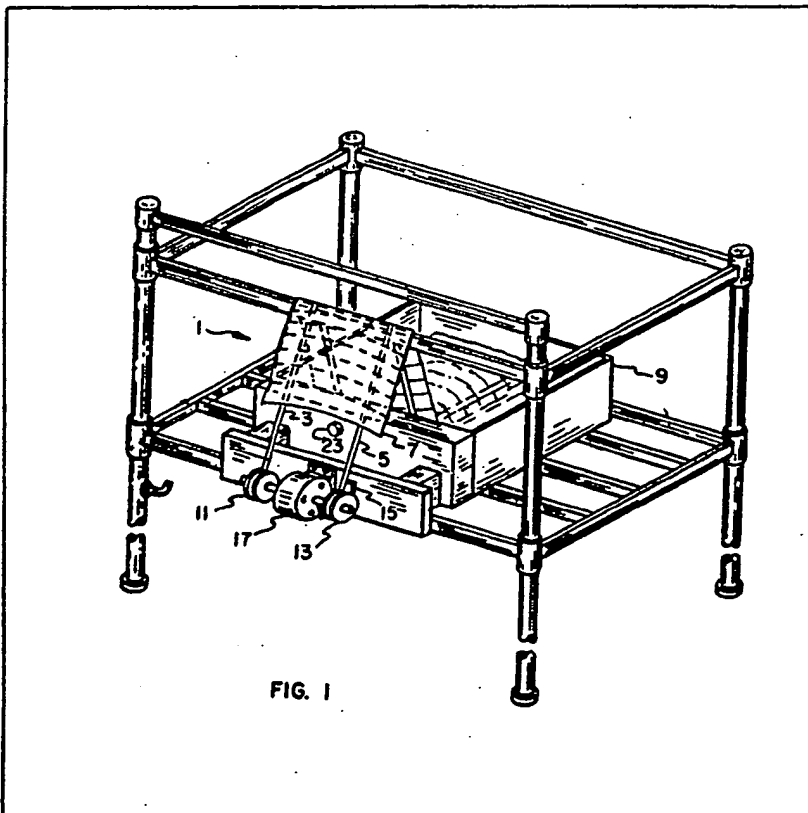


FIG. 1

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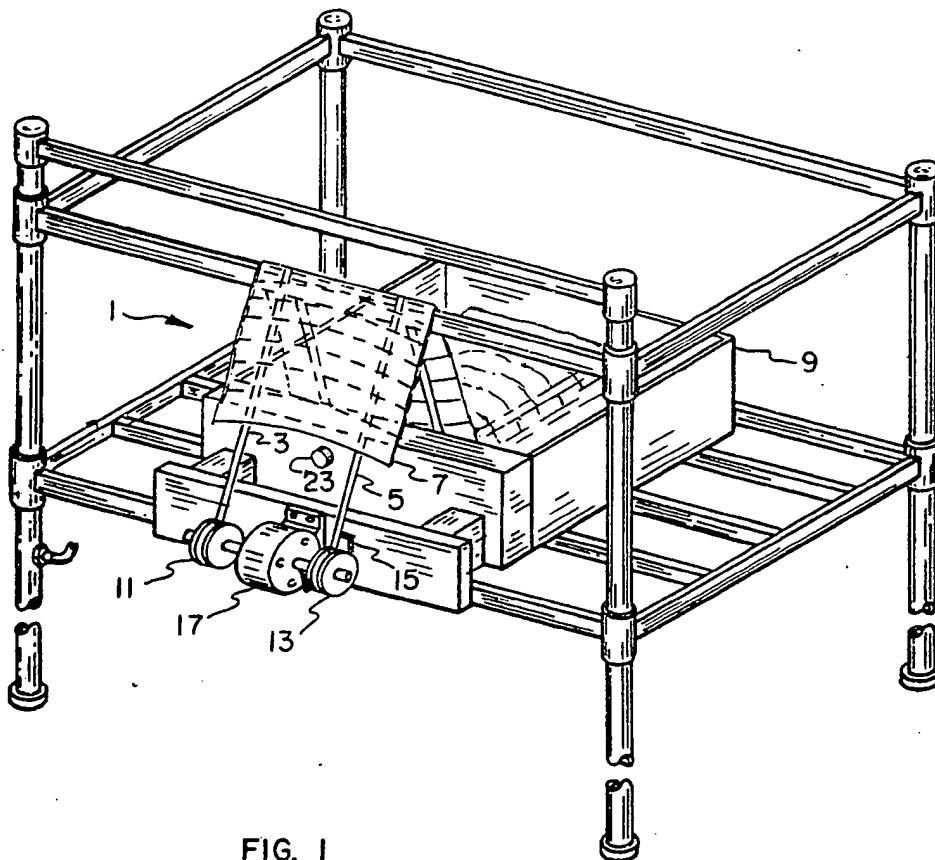


FIG. 1

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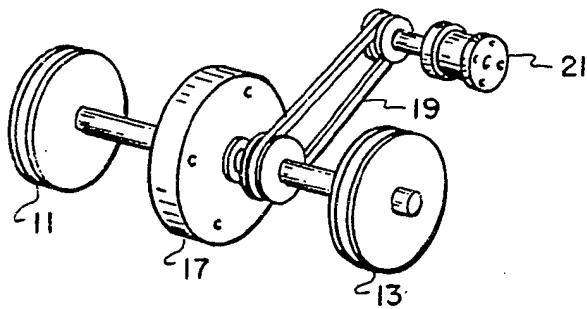


FIG. 2

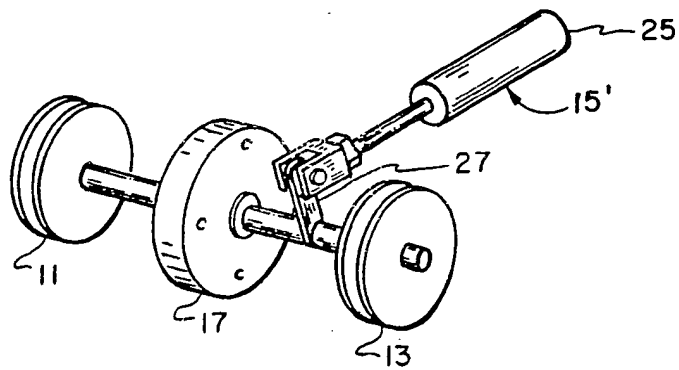


FIG. 3

SPECIFICATION Taped bag dispenser

This invention relates generally to bag dispensing, and more particularly to dispensing a plurality of bags held together by a pair of tapes.

Packaging plays an important role in the economy. The ultimate cost of packaged goods to the consumer depends on the availability of low cost, efficient, packaging methods and devices, and of auxiliary components used in packaging. A variety of consumer products, including meat, is packaged in bags supplied as a chain of imbricated taped bags wherein the bags are adhered to one or more strands of tape. Imbricated bags are disclosed in U.S. Patent Nos. 3,587,843 and 3,698,547 which also illustrate tape pulling units for automatically dispensing taped bags. U.S. Patent No. 4,032,038 additionally discloses a taped bag dispenser.

While each of these taped bag dispensers functions to dispense taped bags in a generally satisfactory manner, they do not contain provision for automatically maintaining equal tension within the two tapes utilized for carrying the taped bags.

It is an object of this invention to provide an apparatus for dispensing taped bags while maintaining alignment of the tapes and while maintaining substantially equal tension in the tapes during the movement of the taped bags.

Accordingly the present invention provides an apparatus for dispensing taped bags, comprising: a source of taped bags, said taped bags having at least two tapes attached thereto for unifying and transporting said taped bags during dispensing; respective reels for winding each of said two tapes; drive means for producing rotational motion in said reels; and a differential communicating with said drive means and said reels whereby said drive means transmits rotational motion to said reels through said differential to wind each of said two tapes so as to maintain substantially equal tension within each of said two tapes.

In order that the present invention may more readily be understood the following description is given, merely by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of an apparatus for dispensing taped bags, in accordance with this invention;

Figure 2 illustrates one form of drive means, in conjunction with the differential drive means, for use in the apparatus of Figure 1; and

Figure 3 illustrates another drive means in conjunction with the differential drive means, for use with the apparatus of Figure 1.

Figure 1 illustrates a bag dispensing apparatus having a differential, in accordance with this invention. Illustrated in Figure 1 of the drawings is a chain 1 of imbricated bags attached together by tapes, 3 and 5. The leading bag 7 is maintained in the dispensing position. The chain 1 of bags may be maintained within any convenient source, such as the box 9 illustrated in Figure 1, so as to have the tapes accessible for movement to the

dispensing position.

The individual tapes 3 and 5 are wound on respective reels 11 and 13. Drive means 15 transmits mechanical motion to a differential 17 which imparts the mechanical movement to the reels 11 and 13.

The particular differential 17 illustrated in the drawings is a differential gear comprising an arrangement of gears forming an epicyclic train for connecting two shafts or axle in the same line dividing the driving force equally between them and permitting one shaft to revolve faster than the other. Such a differential gear is described in U.S. Patent No. 3,406,592 which is incorporated herein by reference. The type of differential described therein is the type which is useful within an automotive vehicle wherein a driving force is transmitted through a differential gear to driven wheels whereby one wheel may even be permitted to stand still while the other rotates.

It is readily apparent that the use of such a differential will permit the slack of one tape to be taken up while permitting the other tape to remain substantially stationary. Such removal of slack maintains the tension within the tape substantially equal while maintaining the bag alignment. This is a significant advantage not found in the prior art bag dispensing devices.

Figures 2 and 3 show alternative connections for drive means 15 so as to permit the driving force to be passed through the differential 17 to winding reels 11 and 13.

Figure 2 shows a conventional chain drive or belt drive 19 which may be intermittently activated for movement, by means of motor 21.

In a preferred embodiment, the apparatus contains sensing means 23 (Figure 1) such as an electric eye or mechanical sensors to detect the presence of a bag in the dispensing position. Should no bag be present in the dispensing position, the motor 21 would be activated for movement until the sensor 23 indicates the presence of such a bag to deactivate the motor 21.

An alternative drive means is indicated in Figure 3 wherein the drive means 15' comprise a pneumatic ram 25 connected through a lever linkage 27 operable for rotating a drive shaft to the differential 17. The output shaft from the differential 17 to the reel 11 is visible in Figure 3, but the drive shaft from the differential to the reel 13 is coaxially within the drive shaft which is visible, this latter shaft being the drive input shaft to the differential. The differential 17 shown in Figure 3 includes a one way clutch mechanism to ensure that the oscillating movement of the ram 25 and lever 27 will affect unidirectional rotation of the reels 11, 13. The pneumatic ram 25 is connected to the sensing means 23 (Figure 1) in a manner similar to that described with reference to Figure 2.

When sensing means 23 indicates that there is no bag in the position occupied by the leading bag 7 in Figure 1, the ram 25 is driven for reciprocating movement to oscillate the lever 27

and the input drive shaft, resulting in unidirectional rotation of the shafts 11, 13 until the sensing means signals a "bag present" condition. During this indexing of the bag chain 1, any inequality between the tensions in the tapes 3, 5 is taken out by the action of the differential 17.

It will thus be seen that the taped bag dispenser in accordance with this invention permits the movement of taped bags through a differential drive whereby substantially equal tension is maintained within the tapes and substantial alignment of the bags is maintained. In the prior art such misalignment was not compensated for by the equipment dispensing the bags, but had to be manually compensated for by either advancing the winding of one tape or cutting one of the tapes and retying so as to re-establish substantially equal tension within the two tapes.

20 CLAIMS

1. Apparatus for dispensing taped bags, comprising: a source of taped bags, said taped bags having at least two tapes attached thereto for unifying and transporting said taped bags during dispensing; respective reels for winding each of said two tapes; drive means for producing rotational motion in said reels; and a differential communicating with said drive means and said reels whereby said drive means transmits rotational motion to said reels through said differential to wind each of said two tapes so as to maintain substantially equal tension within each of said two tapes.

2. Apparatus according to claim 1, and further including sensing means to detect the presence or absence of a bag at a dispensing position, said sensing means being in operative communication

with said drive means for activating the drive means.

3. Apparatus according to claim 1 or 2, wherein said drive means comprises a sprocket and chain for driving said differential.

4. Apparatus according to claim 1 or 2, wherein said drive means comprises a pneumatic ram.

5. Apparatus according to claim 4, including a one way clutch mechanism driving said differential and an oscillating lever fixedly carried by an oscillatorily rotatable drive input shaft to the differential and having a free end driven by said ram for oscillating movement.

6. Apparatus for dispensing taped bags, such apparatus being constructed and adapted to operate substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.

New claims or amendments to claims filed on 17th March 1981.

Superseded claims 1 and 7.

New or amended claims:—

1. Apparatus for dispensing taped bags, comprising: a source of taped bags, said taped bags having at least two tapes attached thereto for unifying and transporting said taped bags during dispensing; respective reels for winding each of said two tapes; drive means for producing rotational motion in said reels; and a differential communicating with said drive means and said reels whereby said drive means transmits rotational motion to said reels through said differential to cause each said respective reel to individually wind each of said two tapes so as to maintain substantially equal tension within each of said two tapes.

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